

A.4.19 AOC 29

Description

AOC 29 was originally designated as “5 Berth Coal Tar” after a sample of a black hardened material (believed to be asphalt) collected from this area in 1999 was initially fingerprinted as coal tar. A detailed review of the history of waste/product previously managed within the area was completed and submitted in the Sampling Analysis Plan dated December, 1999. Coal tar was not found to have been generated or managed within AOC 29 or anywhere else within the facility; however, the following materials were known to have been transported through pipeways at 5 Berth Area:

- No.6 oil;
- No.6 oil blends;
- Petroleum distillate;
- No.2 oil;
- Light cracked fuel;
- High sulfur crude;
- Low sulfur crude;
- Heavy blend;
- Sour water; and
- Pump shaft lubricant.

LNAPL was also found within this area during execution of the Sampling and Analysis Plan. The LNAPL has been fingerprinted as No. 2 oil that is consistent with the materials known to have been previously handled within the area. This finding suggests that there are two distinctly different types of material present within AOC 29, a lighter No. 2 oil and a heavier solid material which appears to be asphalt. The solid material appears to migrate upward during the summer months. Chevron has proceeded with the investigation of the AOC 29 LNAPL under the LNAPL Project, and as discussed in Section 7 of this report, the LNAPL within AOC 29 has been delineated.

Pursuant to Chevron’s discussions with the NJDEP and EPA in the August 18, 2003, meeting, Chevron has performed additional field investigations within AOC 29 to further characterize the solid material underlying the area. In January of 2003, Chevron performed test pit excavations to further characterize the nature of the debris found in the subsurface. Based upon the physical characteristics of the solid material and the fact that there are no records of coal tar being produced or managed within the Refinery, Chevron also performed confirmatory fingerprint sampling within the area. The following is a brief description of the recent investigation, findings and conclusions.

Soils

In addition to the borings and piezometers shown on Figure A.4.16 and summarized on Table A.4.14, two test pits (A29-Pit1 and A29-Pit2), were dug in areas where the solid material appeared to be the greatest at surface. A29-Pit1 measured 12 feet by 4 feet and was excavated to a total depth of 6 feet bgs. The excavation was abandoned at 6 feet bgs because a solidified hard material was encountered at depth and groundwater intrusion into the pit prevented further excavation. Native material was not encountered within A29-Pit1. The fill material excavated from A29-Pit1 consisted of a solid black asphalt material (from ground surface to two feet bgs), a gray coarse to fine sand (two to four feet bgs), and flyash impacted with LNAPL (four to six feet bgs). A solidified material similar to asphalt was observed on the western wall and along the bottom of the A29-Pit1.

A29-Pit2 was excavated immediately west of A29-Pit 1. A29-Pit2 measured 18 feet by 10 feet and was excavated to a total depth of nine feet bgs. While a continuous zone of native material was not encountered within A29-Pit2, small amounts of dark gray clay typical of the native material in this area was observed near the bottom of the northern wall. The entire eastern wall was comprised of alternating layers of asphalt material (approximately two feet thick) while a solid pliable material, which appeared similar to roofing shingles, was seen at seven feet bgs on the western wall.

Two confirmatory samples (S1583A1 and S1584D3) were obtained for fingerprinting because neither of the test pits revealed materials that exhibited typical characteristics of coal tar. The samples were collected from varying depths and biased to the material similar to the initial sample which fingerprinted as coal tar, as well as to material that may have contained coal tar (e.g., asphalt shingles). S1583A1 was obtained in the center of A29-Pit1 from the 0 to 0.5-foot interval comprised of what visually appeared to be asphalt. S1584D3 was obtained from A29-Pit2 from the 7 to 7.5-foot interval comprised of what appeared to be roofing shingles. The samples were submitted to ChevronTexaco Energy Research and Technology Company (CERTC) for analysis.

CERTC reported S1583A1 (the asphalt material) had a carbon range of approximately C11 to beyond C50. The lab stated that the material could be weathered heavy crude oil or possibly heavy gas oil but was not coal tar, “which if it were present would be easily distinguishable by its distinct pattern of polycyclic aromatic hydrocarbons (PAHs)”. In the case of sample S1534D3 (the roofing shingles), the lab reported that the material was a mixture of approximately 3% biodegraded jet/kerosene range material and 97% heavy oil, perhaps gas oil, but did not contain coal tar. The heavy oil identified as the major component (>97%) in both samples is consistent with the composition of asphalt.

Groundwater

Benzene (2J µg/L and 4J µg/L) was detected at concentrations exceeding the groundwater delineation criterion in samples from two monitoring wells (MW-155 and MW-156, respectively) located at the downgradient edge of the AOC 29 LNAPL area.

Naphthalene (470J $\mu\text{g/L}$) and carbazole (11 $\mu\text{g/L}$) were also detected above the groundwater delineation criteria in the October 2002 groundwater sample from MW-156. A more detailed discussion of potential groundwater impacts can be found in Section 8 of the Report.

Surface Water/Sediment

As part of the Full RFI, one surface water sample and one sediment sample were collected from the Arthur Kill, immediately downgradient of AOC 29 (Transect 15). As summarized on Table A.4.16, and further discussed in Section 9, although PAHs and metals were detected in excess of the applicable sediment screening criteria in the sediment sample from Transect 15, it does not appear that Arthur Kill has been impacted by AOC 29 because the COCs detected in these samples were also detected at similar concentrations in the upgradient sample from the Arthur Kill.

Conclusions

Based upon the findings of the investigation, there are two different types of material present within AOC 29, including No. 2 fuel oil (LNAPL), and solidified heavy oil (asphalt); however, neither of these materials would be classified as coal tar. Therefore, AOC 29 will now be referred to as AOC 29 (No. 5 Berth).

Investigations conducted at AOC 29 suggest that large deposits of solidified heavy oil (asphalt) are present, and that this underlying material is probably the source of the surface seepage that has been observed during the summer months. The area is currently being monitored with downgradient wells, where no LNAPL has been observed. The asphalt and LNAPL impacts at AOC 29 will be evaluated further during the CMS. Potential groundwater impacts at AOC 29 will be included in the CMS as part of the site-wide groundwater evaluation.